



Source Water Assessment Program (SWAP) Report For Lee's Supermarket

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

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Table 1: Public Water System (PWS) Information

PWS NAME	Lee's Supermarket
PWS Address	796 Main Road
City/Town	Westport, Massachusetts
PWS ID Number	4334008
Local Contact	Albert Lees
Phone Number	508 636-3348

Well Name	Source ID#	Zone I (in feet)	IWPA (in feet)	Source Susceptibility
Well #1	4334008-01G	100	422	High

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas
5. Appendix

1. Description of the Water System

Lee's Supermarket receives its water from Well #1 which is located in a pit below the supermarket floor on the north side of the building. There are no boring logs available for Well #1. The well is believed to be 54 feet deep. Monitoring wells located across Main Street encountered bedrock approximately 50 feet below the ground surface. Therefore, it is likely that Well #1 is a sand and gravel well located just above the bedrock surface. Based on the current Zone I of 100 feet and Interim Wellhead Protection Area (IWPA) of 422 feet, the average daily withdrawal for the well is limited to 1000 gallons per day. The Department utilized Title 5 water use estimates included on sewage system repair plans approved by the Westport Board of Health on July 17, 1996.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e. Clay layer) that can prevent contaminant migration. Please refer to the attached map of the Zone I and IWPA.

The well serving the facility has no treatment at this time. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1.

Lee's Supermarket is sampling for volatile organic compounds (VOCs) annually as part of its routine sampling requirements. Methyl-tertiary-Butyl ether (MtBE) has been detected at concentrations less than Massachusetts drinking water guidelines of 70 ppb in groundwater samples collected from Well #1 in April 2001 and July, August 1999. Groundwater samples collected from Lee's supermarket Well #1, as well as private wells in the vicinity have been tested for VOCs as part of an investigation into leaking underground storage tanks at the Town Hall 816 Main Road (RTN 413584) and Cumberland Farms at 809 Main Road (RTN 413684). Groundwater samples collected from Well #1 as part of these investigations contained MTBE at 6.5 ppb and 3.8 ppb during June 2000 and January 2001 sampling grounds, respectively.

2. Discussion of Land Uses in the Protection Areas

There are a number of land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **INAPPROPRIATE ACTIVITIES IN ZONE I;**
2. **STORAGE, USE AND HANDLING OF HAZARDOUS MATERIALS,**
3. **SEPTIC SYSTEM,**
4. **UNDERGROUND STORAGE TANKS (UST),**
5. **PRESENCE OF OIL OR HAZARDOUS MATERIAL CONTAMINATION SITES.**

The overall ranking of susceptibility to contamination for the well is High, based on the presence of at least one High threat land use or activity in the IWPA, as seen in Table 2.

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
Fuel Storage Below Ground	No	Well #1	High	Two (2) 10,000 gallon gasoline, double walled, leak detection
Storage, use, and handling of hazardous materials	Well #1	Well #1	Moderate	Household hazardous materials, cleaning and maintenance supplies for supermarket,
Parking lot, driveways & roads	Well # 1	Well #1	Moderate	Limit road salt usage
Septic System	No	Well #1	Moderate	Refer to septic systems brochure in the Attachments
Fuel Storage Above Ground	No	Well #1	Moderate	There are several ASTs associated with surrounding municipal and retail properties.
Small Qty Generator	No	Well #1	Moderate	Westport Highway Garages
Oil or Hazardous Materials Sites	No	Well #1	-	Refer to appendix

* -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

1. **Zone Is** – Currently, the well does not meet DEP's restrictions, which only allow water supply related activities in Zone Is. The facility's Zone I contains the supermarket buildings, supermarket parking areas, a transformer and landscaped areas.

Recommendations:

- ✓ Public water systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems. Examples of modification or expansion include the addition of buildings, temporary or permanent, and increased water use due to an increase of staff.
- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ To the extent feasible, remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ There is one transformer located approximately 100 feet south of Well #1. All electrical transformers contain oil and depending on the age of the transformer, the oil may contain PCBs. According to supermarket staff the transformer was installed in 1995 and therefore would not contain PCBs. Keep the area near transformers free of tree limbs that could endanger the transformer in a storm.

2. **Storage, Use, and Handling of Hazardous Materials: Supermarket** - If managed improperly, household hazardous materials can all contribute to groundwater contamination. Hazardous materials may include automotive products, household cleaners paints, solvents, pesticides, and other substances. The materials within the supermarket pose a potential threat to the well due to their large amounts, proximity and potential for accidental release.

Recommendation:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- ✓ To learn more, refer to the hazardous materials guidance documents at www.state.ma.us/dep/bwp/dhm/dhmpubs.htm and the household hazardous waste documents available at <http://www.state.ma.us/dep/recycle/hazards/hhwhdome.htm>

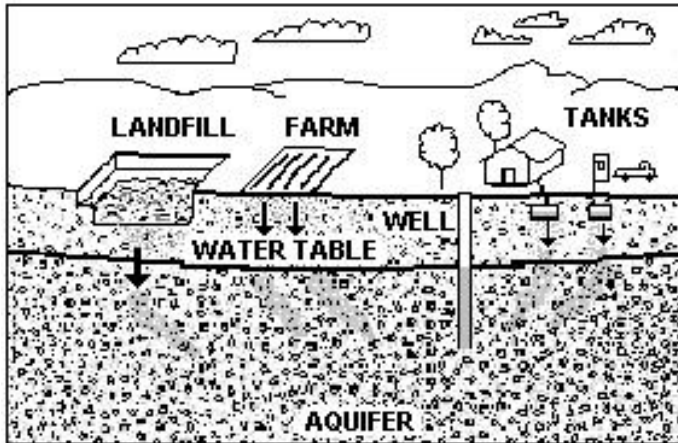


Figure 1: Example of how a well could become contaminated by different land uses and activities.

(2. Continued) Storage, Use, and Handling of Hazardous Materials - Town Highway Department

The Highway Department uses and store supplies of motor oil, antifreeze, and other automotive related products. This facility generates small quantities of hazardous waste and waste oil through its normal daily operations. This facility is registered as a waste generator with the Department and has a contract with a licensed hauler to remove the hazardous waste off-site. Hazardous waste is a potential source of contamination if it is properly handle or stored. The Town of Westport Highway Department recycles waste oil in an on-site space heater. Additionally, road salt is stored in an on-site building.

Recommendation:

- ✓ **Municipal facilities** - Work with the town to promote best management practices at municipal facilities such as maintenance and highway garages. Refer to: <http://www.epa.gov/region1/steward/neeat/munis1.html>
- ✓ Information on requirements for hazardous waste generators is available in the document entitled "A

For More Information:

Contact Mark Dakers in DEP's Lakeville Office at (508) 946 - 2847 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws/, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, and the local media.

Summary of Requirements for Small Quantities Generators of Hazardous Waste" and at the Department web site <http://www.state.ma.us/dep/bwp/dhm>.

3. **Septic Systems**- The septic system consists of two subsurface leaching fields located within the IWPA. If a septic system fails or is not properly maintained it could be a potential source of nutrients and microbial contamination. Improper disposal of household hazardous chemicals to the septic system is a potential source of contamination to the water supply. Plans for a septic system repair at the supermarket were approved by the Board of health on July 17, 1996. A new leaching area with a 1000 gallons per day design flow was installed 240 feet east-southeast of the well. The pre-existing leaching field was maintained and is used alternately with the new leaching area. The pre-existing leaching field is located 180 feet east of the well.

Recommendations:

- V Septic system components should be located, inspected, and maintained on a regular basis. Refer to attachment for more information regarding septic systems.
- V Educate workers on septic systems about using cleaning compounds that are safe for the septic system, on proper disposal practices, i.e. only sanitary waste in the septic system. Workers should dispose of used oil, antifreeze, paints, and other household chemicals properly-not in septic systems. Information on septic systems can be found at mass DEP web site <http://www.state.ma.us/dep/brp/files/yoursyst.htm>
- V Monitor water usage, as exceeding the septic system design capacity could cause premature failure of the septic system.

4. **Underground Storage Tank (UST)**-There are two (2) double walled 10,000 gallons gasoline UST with leak detection located approximately 300 feet west of Well #1 (i.e. gas station). If managed improperly, Underground Storage Tanks can be a potential source of contamination due to leaks or spills of the chemicals they store.

Recommendation:

- V Work with the local fire Department and UST owner to ensure compliance with local code requirements regarding USTs.
- V During refilling of UST, the UST owner should ensure that the operator of the oil transport tanker does not leave the vehicle while the UST is being filled.
- V The UST owner should ensure that the delivery operator has determined the tanks available oil capacity to prevent overfilling (refer to 527 CMR 8.00).

5. **Presence of Oil or Hazardous Material Contamination Sites** – The Zone II contains DEP Tier Classified Oil and/or Hazardous Material Release Sites indicated on the map as Release Tracking Numbers 4-13584, and 4-13684. Refer to the attached map and the Appendix for more information.

Recommendation:

- V Monitor progress on any ongoing remedial action conducted for the known oil

or contamination sites.

Other activities noted during the assessment: There are a gasoline and a diesel aboveground storage Tank located in a concrete spill protection enclosure at 816 Main Road. The aboveground tanks are just outside the IWPA of Well #1. AST's can be a potential source of contamination due to the spill or leaking of contents they store. Work with the town of Westport to ensure that during refilling of AST, the operator of the petroleum transport tanker does not leave the vehicle while the AST is being filled. Ensure that the delivery operator has determined the tanks available oil capacity to prevent overfilling.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. Lee's Supermarket is commended for current protection measures. Storm water from the parking lot area between the building and Main Street is diverted out of the Zone I through grading, catch basins and piping to a storm water retention basin located on the eastern perimeter of the IWPA. A new grease trap system was installed to prevent clogging of the septic system. All UST's associated with Lee's Supermarket have been previously removed. During the site visit, the Department noted that the previous years water meter reading exceeded the 1000 gallons per day withdrawal limit. The Department recommended leak detection program be conducted and that water meter readings be monitored in the future since the bathrooms at the facility had been renovated to include low flow toilets and automatic shut off devices on the sinks. A review of recent water meter readings indicates the current average water usage is 958 gallons per day. The Department recommended you continue to monitor water usage for compliance with the average approved daily withdrawal limit of 1000 gallons per day. Lee's Supermarket should review and adopt the key recommendations above and the following:

Zone I:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any above ground tanks for leaks, etc.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Consider propane or natural gas for back-up power sources.

Training and Education:

- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ Work with your community to ensure that stormwater runoff from Main Road and adjacent properties are directed away from the well and are treated according to DEP guidance.

Planning:

- ✓ Work with local officials in Westport to include Lee's supermarket IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.
- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Factsheet
- Your Septic System Brochure
- Pesticide Use Factsheet
- Wellhead Protection Grant Program Fact Sheet
- Source Protection Sign Order Form

5. Appendix

Table of DEP Regulated Chapter 21E Hazardous Materials Release Sites